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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,863	09/23/2003	Tomokazu Morita	243103US2SRD	1364
22850	7590	02/27/2007	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			WILLS, MONIQUE M	
			ART UNIT	PAPER NUMBER
			1745	
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		02/27/2007	ELECTRONIC	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/27/2007.

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## Office Action Summary

**Application No.**

10/667,863

**Applicant(s)**

MORITA ET AL.

**Examiner**

Monique M. Wills

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 29 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,8,10-14 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,10-14 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Response to Amendment*

This Office Action is responsive to the Amendment filed November 29, 2006. The pending claims are rejected as follows:

- Claims 1-4, 8, 11-13 & 16 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1,5, 9, 14 & 15 of copending Application No. 11/175,294 Mortia U.S. Pub. 20060068287.
- Claims 1-6, 8, 10-14 & 16 rejected under 35 U.S.C. 102(e), on new grounds as being anticipated by Aramata et al. U.S. Pub. 2003/0215711.

A brief reiteration is recited below.

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s)

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because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-4, 8, 11-13 & 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1,5, 9, 14 & 15 of copending Application No. 11/175,294 Mortia U.S. Pub. 20060068287.

Although the conflicting claims are not identical, they are not patentably distinct from each other because they contain common subject matter as follows:

Claims 1 & 5 of ' 294, embrace instant claim 1, by necessitating the following: a negative electrode active material for nonaqueous electrolyte battery, comprising: composite particles containing a silicon and a silicon oxide dispersed in a carbonaceous matrix; wherein the *silicon has a size of 2 to 50 nm*, and a coating layer comprising a carbonaceous matrix coating on a surface of the composite particles, wherein the material has a half width of a diffraction

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peak of an Si (220) plane in a powder X-ray diffraction measurement of from 1.5 to 8.0°.

Claims 1 & 5 of ' 294, embrace instant claims 2 & 3, by necessitating the following: a negative electrode active material for nonaqueous electrolyte battery, comprising: composite particles containing a silicon and a silicon oxide dispersed in a carbonaceous matrix; wherein the *silicon has a size of 2 to 50 nm*, and a coating layer comprising a carbonaceous matrix coating on a surface of the composite particles, wherein the material has a half width of a diffraction peak of an Si (220) plane in a powder X-ray diffraction measurement of from 1.5 to 8.0°.

Claims 1 & 5 of ' 294, embrace instant claim 4, by necessitating the following: a negative electrode active material for nonaqueous electrolyte battery, comprising: composite particles containing a silicon and a silicon oxide dispersed in a carbonaceous matrix; wherein the silicon has a size of 2 to 50 nm, and a coating layer comprising a carbonaceous matrix coating on a surface of the composite particles, wherein the material has a half width of a diffraction peak of an Si (220) plane in a powder *X-ray diffraction measurement of from 1.5 to 8.0°*.

Claims 1 & 5 of ' 294, embrace instant claim 8, by necessitating the following: a negative electrode active material for nonaqueous electrolyte

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battery, comprising: composite particles containing *a silicon and a silicon oxide* dispersed in a carbonaceous matrix; wherein the silicon has a size of 2 to 50 nm, and a coating layer comprising a carbonaceous matrix coating on a surface of the composite particles, wherein the material has a half width of a diffraction peak of an Si (220) plane in a powder X-ray diffraction measurement of from 1.5 to 8.0°.

Claims 9, 14 & of ' 294, embrace instant claim 11, by necessitating the following: a nonaqueous electrolyte battery comprising: a positive electrode; a negative electrode comprising a negative electrode active material opposite to the positive electrode, the material comprising: composite particles containing a silicon and a silicon oxide wherein the silicon has a size of 1 to 300nm, and dispersed in a carbonaceous matrix; and a coating layer comprising a carbonaceous matrix coating on a surface of the composite particles, wherein the material has a half width of a diffraction peak of an Si (220) plane in a powder X-ray diffraction measurement of from 1.5 to 8.0.degree.

Claims 9, 14 & 15 of ' 294, embrace instant claims 12-13 & 16, by necessitating the following: a nonaqueous electrolyte battery comprising: a positive electrode; a negative electrode comprising a negative electrode active material opposite to the positive electrode, the material comprising: composite

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particles containing a silicon and a silicon oxide, wherein the silicon has a size of 2 to 50nm, and dispersed in a carbonaceous matrix; and a coating layer comprising a carbonaceous matrix coating on a surface of the composite particles, wherein the material has a half width of a diffraction peak of an Si (220) plane in a powder X-ray diffraction measurement of from 1.5 to 8.0.degree.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

*Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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Claims 1-6, 8, 10-14 & 16 rejected under 35 U.S.C. 102(e) as being anticipated by Aramata et al. U.S. Pub. 2003/0215711.

In re claims 1 & 11, Aramata teaches a nonaqueous electrolyte secondary battery (§ 1) comprising: a positive electrode (§ 54); a negative electrode containing a negative electrode active material including carbonaceous particles and a Si phase dispersed in the carbonaceous particles (§ 11); wherein average size of the Si phase is less than 100 nm (§ 11); and a nonaqueous electrolyte (§ 54). The limitation of claims 1 & 11, with respect to the negative electrode active material being  $1.5^{\circ}$  or more and  $8^{\circ}$  or less in a half width of a diffraction peak derived from (220) plane of silicon in powder X-ray diffraction, is considered an inherent characteristic of the prior art set forth, because Aramata teaches the same silicon/carbon anodic material set forth by Applicant. Support for this assertion is provided in MPEP 2112.01, “ [where] [p]roducts of identical chemical composition can not have mutually exclusive properties.” A chemical composition and its properties are inseparable. See *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). Therefore, since Aramata teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. Further concerning claims 1 & 11, the silicon oxide is in contact with the Si phase, because the crystallites of silicon are dispersed in silicon dioxide (§ 11). Furthermore, Aramata teaches



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fusing carbon to part or all of the silicon and silicon dioxide particles for imparting conductivity (§ 9). Further concerning claims 1 & 11, Aramata teaches fusing carbon to part or all of the silicon and silicon dioxide particles for imparting conductivity (par. 9). Therefore, providing carbon particles to including silicon oxide phases disperse therein.

With respect to claims 2, 3 & 12, the Si phase is 1 to 100 nm (§ 11 & 32).

With respect to claims 4 & 13, limitation regarding the negative electrode active material having a half width between  $2^\circ$  and  $6^\circ$ , is considered an inherent characteristic of the prior art set forth, because Aramata teaches the same silicon/carbon anodic material set forth by Applicant. See In re Spada above.

In re claim 5, the molar ratio of silicon atoms to carbonaceous particles satisfy the formula  $0.2 \leq (X_1/X_2) \leq 2$ , is considered an inherent characteristic of the prior art set forth, because Aramata teaches the same anodic materials and particle sizes required by Applicant. See In re Spada above.

As to claims 8 & 16, the carbonaceous material further comprises particles in the silicon oxide phase (§ 11).

With respect to claims 6 & 14, the limitation with respect to the carbonaceous particles size being from 5 microns to 100 microns, is considered an inherent property of the prior art set forth, because silicon composite power including carbon, has an average particle size of about 0.1 to 30 microns (§ 37).

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Therefore, the individual carbon particles have an average particle size less than 30 microns, embracing instant claims 6 & 14.

In re claim 10, the molar ratio of silicon atoms to Si phase satisfy the formula  $0.6 \leq (X_1/X_3) \leq 1.5$ , is considered an inherent characteristic of the prior art set forth, because Aramata teaches the same anodic materials and particle sizes required by Applicant. See In re Spada above.

Therefore, Aramata anticipates the instant claims.

### ***Response to Arguments***

Applicant contends that Aramata et al. fails to disclose “ a negative electrode containing a negative electrode active material including carbonaceous particles, *said carbonaceous particles each including silicon oxide phases dispersed therein*, said silicon oxide phases each including an Si phase dispersed therein” . Distinctively, Aramata’ s particle structure includes carbon merely coated on the surfaces of silicon crystallites. This argument is not persuasive. In the instant specification at page 7, silicon and carbon are composite materials. Similarly, Aramata teaches fusing carbon to part or all of the silicon and silicon dioxide particles for imparting conductivity (par. 9). It is reasonable to expect the fusion of silicon and carbon form a composite as

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described in the instant specification at page 7, lines 10-12. More importantly, it would be reasonable to expect the fused carbon particles to include silicon oxide phases disperse therein.

Applicant also points to the instant Si phase' s ability to intercalate and deintercalate large amounts of lithium with a silicon dioxide buffer, to distinguish from Aramata. However, the reference expressly discloses that microstructures of silicon are dispersed in silicon dioxide, forming negative active material (par. 9). Therefore, it is reasonable to expect the microstructure to intercalate and deintercalate lithium, because it forms part of the active material. Further, with respect to silicon dioxide buffering, the Aramata silicon structure possesses the same buffer ability, because the referenced compound is identical to the instant claims. In accordance with MPEP 2112.01, " [p]roducts of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

With respect to the double-patenting rejection, Applicant submits that a terminal disclaimer can be filed, if the claims in the present application and co-pending Application No. 11/175,294 remain obvious in view of each other at

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the time of allowance of either of these applications. Therefore, the double-patenting rejection will be addressed once the case is in condition for allowance.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.


If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

2/14/07

  
PATRICK RYAN  
SUPERVISOR